

Title	WHERE DOES COAL COME FROM?
Level	Primary/Middle (2 – 8)
Subject	Earth Science / Environmental Science
Duration	Varies according to age/level of students
Objective	The students will be able to explain the sources of coal.
Contributor	John Cattaneo – Ringgold School District

➤ **Materials**

1. Diagrams or transparencies of Earth's layers
2. Surface mining
3. Shaft mining – one chocolate chip cookie per student
4. Box of toothpicks
5. Napkins
6. Butcher paper for chart
7. Crayons

➤ **Activity**

1. Discuss how the Earth is formed in layers. Show diagram/transparency of sedimentary layers. Explain that coal is one of the layers formed millions of years ago.
2. Divide the class into groups of 4 to 5 students. Ask them to discuss and to list ways of extracting coal deposits from the ground. Share ideas then show diagram/transparency of coal mining – both surface or strip mining and underground coal mining.
3. Give each student a cookie and a napkin. Explain that the cookie represents the whole earth. The tan batter represents the land while the chocolate chips are the coal deposits. Each group will discuss the difficulty of mining visible coal deposits (chips) versus any hidden inside of the land (batter). How might this mining hurt the environment?
4. Instruct each student to count the number of visible coal deposits. One person can record the numbers from each group on a chart.
5. Next have each student pick the cookie apart with a toothpick and place "coal" deposits in one pile and "land" in another. Compare the piles. What does it mean if the chip pile is larger than the tan batter pile? Have you made a mess of the land? Which cookies would be better to mine first?
6. Brainstorm the effects on the land (tan particles) of mining. The surface coal deposits as compared to the deposits below the surface. Have each student write a story about what would happen to the earth, trees, and wildlife when real underground coal was mined.
7. Decide how you could use the coal that is mined. Share your list with the class.
8. Determine which places in Pennsylvania have the largest amount of coal and identify the different types of coal.